

OLD JOHN D.

draws annually twenty times what he could earn in any position, with all his commercial knowledge.

Start saving money today for the boy with one of our Home Banks. At the interest we pay it will pile up to big figures before he is 21.

Bank of Hawaii, Ltd.

Capital-Surplus, \$1,200,000

INSURANCE

Fire Life

Accident Marine

Plate Glass Surety Liability



Hawaiian Trust Co., Ltd.
823 Fort Street

FIRE!

If Honolulu were again swept by a conflagration, could you collect your insurance?

C. Brewer & Co., Ltd.

(ESTABLISHED 1896)

represent the the largest and strongest fire insurance companies in the world.

Lowest Rates Liberal Settlements

FIRE INSURANCE

The B. F. Dillingham Co.

LIMITED

General Agent for Hawaii

After Assurance Company of London, New York Underwriters' Agency, Providence Washington Insurance Co. 4th FLOOR, STANGENWALD BLDG.

More Than a Million Dollars

Report of the Insurance Commissioner, shows that more than a million dollars net is sent out annually from this territory.

Home Insurance Co.

Why not patronize and keep some of this money here? O'Neill Building Cor. Fort and King Telephone 3529.

FOR SALE

\$ 850—Lot 55x32.5 off Beretania St., nr. Punchbowl.

\$2750—1.69 acres on old Palolo Rd. with 2-bedroom house. Many fruit trees.

\$1500—10-acre farm; Kailua, 1 1/2 miles from King St.

\$ 400—Lot 50x100 at Punalu, near carline.

\$2250—Lot 177x67, with house, on Liholiho St., near Makiki Fire Station.

lots on Fort St. above bridge at 180 to 200 per sq. ft.

P. E. R. STRAUCH,

Waltz Building 74 S. King Street

Jas. W. Pratt

REAL ESTATE, INSURANCE, LOANS NEGOTIATED
Stangenwald Building

C. Q. Yee Hop & Co.

MEAT MARKET AND IMPORTERS

Telephone No. 3451

Clothing and Shoes

Yee Chan & Co.

Bethel and King Streets.

BUY YOUR DRY GOODS FROM

Kwong Sing Loy & Co.

King Street, Three Doors from Bethel

FINE LINE OF DRY GOODS

Wah Ying Chong Co.

KING STREET EWA FISHMARKET

IMPORTERS OF ORIENTAL GOODS

Wing Wo Tai & Co.

841 Nuuanu, near King Street. Phone 1096.

Exclusive Patterns In Handsome Greys

W. W. AHANA,

82 SOUTH KING STREET

SANG CHAN

McCANDLESS BLDG. P. O. Box 901. Telephone 3129.

FINEST FIT

And Cloth of All Quality Can Be Purchased from

WONG WONG CO.

Builders and Contractors

Office, Maunakea St.

L. CHONG & CO.

FURNITURE

Mattress Upholstering and Furniture Repairing

22 BERETANIA NEAR NUUANU

YOU'LL FIND WHAT YOU WANT AT THE

City Hardware Co.,

NUUANU AND KING STREETS

WING CHONG CO.

KING ST., NEAR BETHEL

Dealers in Furniture, Mattresses, etc., etc. All kinds of KOA and MIS-SION FURNITURE made to order.

BO WO

Men of the Fleet and Tourists The best place in Honolulu to buy Jade and Chinese Jewelry of all kinds.

HOTEL AND SMITH STREETS

Y. YOSHIKAWA,

The BICYCLE DEALER and REPAIRER, has moved to

180 KING STREET

New location—Red front, near Young Building. Telephone 2518.

Telephone 3197 P. O. Box 708

S. KOMEYA

Vulcanizing Works 182 Merchant Street Near Alaska

HONOLULU, T. H.

Y. TAKAKUWA

COMMISSION MERCHANT Japanese Provisions and General Merchandise

NUUANU ST. NEAR KING STREET

CUT FLOWERS

—Also—

CLOTHES CLEANED AND PRESSED S. HARODA Fort and Pauahi Sts. Phone 3023

Home Course In Road Making

I.—The Office of Public Roads.

By LOGAN WALLER PAGE, Director Office of Public Roads, United States Department of Agriculture

Copyright by American Press Association, 1912.



IN March, 1893, a petition was presented to congress asking that a road department similar to the agricultural department be founded at Washington for the purpose of promoting construction and maintenance of roads and for teaching students so that they might become skilled road engineers and to establish a permanent exhibit of sections of road illustrating various methods of construction and the best road materials and machinery. This petition was signed by the governors of many of the states, including Governor McKinley of Ohio, by chambers of commerce and universities and was endorsed by resolutions of legislatures.

The office of road inquiry was established under authority of an act of



UNITED STATES OFFICE OF PUBLIC ROADS. congress approved March 3, 1893, making appropriation of \$10,000 for the department of agriculture. The clause relating to this work provided that the secretary of agriculture should make inquiries in regard to systems of road management throughout the United States, make investigations in regard to the best methods of road making, prepare publications on this subject and assist agricultural colleges and experiment stations in disseminating information.

Since 1893 the total amount appropriated for the office of public roads is \$304,800, and since its establishment the office has issued 40 bulletins, 95 circulars, 9 farmers' bulletins, 21 year book reprints and 18 annual reports, a total of 183 publications.

The office has directed the construction of about 340 object lessons and experimental roads, illustrating macadam, bituminous macadam, brick, gravel, sand-clay, shell and earth construction. The approximate expenditure on these object lessons and experimental roads by local authorities has been \$800,782, and the subsequent road work due directly to the object lesson roads represents expenditures running well up into millions. Lectures and personal advice by engineers and experts have constituted a prominent feature of the work of the office since its establishment. The road material laboratory was installed in December, 1900, and from that time to July 1, 1911, about 5,300 samples of road material have been received from practically every state in the Union and tested to determine their character and value for road building.

A photographic laboratory was installed in January, 1900, and has now a complete outfit. This was the direct result of a great need for illustrated lectures. The office has now a collection of about 6,000 negatives and about 3,000 slides, many of which have been colored. These illustrate all phases of road work.

Experiments have been conducted with oils, tars, rock asphalt and various preparations for the purpose of preventing dust and preserving macadam roads from destruction under modern traffic conditions. The office has conducted investigations to determine the feasibility of the sand-clay method of road building in the southern states as well as in the prairie states, and this method of construction has been found to be quite practicable, especially in the south.

A study of the construction of roads, of natural soils by treatment with asphaltic oils, has been made and was published in circular No. 90. The office is conducting investigations on the use of slag as a road material and the improvement of sand roads in parts of the country where clay is not accessible. Practical efforts have been made toward bringing about the more general use of the split log drag in the maintenance of earth roads.

One of the unique and striking exhibits at the Alaska-Yukon-Pacific exposition consisted of a series of miniature models illustrating every known type of improved road and the various

road building devices, such as rollers and crushers, in actual operation. This exhibit was designed and prepared by the office, and since the exposition closed similar exhibits have been shown in many parts of the United States, partly through the medium of expositions and partly by means of exhibit trains operated by several railroads. Lecturers and demonstrators accompany these exhibits, making them in reality schools of instruction in road building.

Graduates in engineering are appointed from colleges each year after a competitive examination, and are given thorough training while rendering practical services to the government. In this way an efficient corps of engineers is being built up, which will aid the development of road building along proper lines, both during and after their connection with the government. This work was begun in the fiscal year 1905.

Investigations into the decomposition of rock powders under the action of water have led to important discoveries with reference to increasing the cementing value of road materials. The investigation into the corrosion of iron and steel culverts has brought out important results. The generally accepted theories regarding the rusting of iron have been demonstrated to be incorrect, and it has been shown that by treating the surface of the iron with a strong oxidizing agent the rusting can be inhibited.

In May, 1907, the office inaugurated a project designed to introduce the best possible systems of construction, maintenance and administration of roads in the various counties. Under this plan engineers are assigned to make thorough investigation on all phases of the road work of the county to which they are assigned, and prepare exhaustive reports giving plans, estimates and recommendations.

The number of the employees of the office has increased from one on July 1, 1893, to 157 on July 1, 1911. The present appropriation of the office is \$100,720, out of which \$3,500 is paid for rent, leaving \$97,220 to pay the salaries of these 157 employees, as well as traveling expenses, the purchase of equipment and supplies, and the usual running expenses.

The most thorough and systematic methods of organization have been introduced into the administration of the office, and the great library on all phases of road work is the best in the western hemisphere, and the library is being added to constantly.

The policy of the office in recent years has been to co-operate with the officials in charge of road work in the various states as closely as possible, and the endeavor is being made so to correlate road work in each state by voluntary co-operation as to constitute one great movement along uniform lines and make the progress and methods of each state known to every other state through the medium of the office. In furtherance of this object a comprehensive investigation was begun in



SECTION OF THE BITUMINOUS LABORATORY OFFICE OF PUBLIC ROADS.

1904 to ascertain the mileage of improved and unimproved roads, the character of improvement, the amounts expended, rates of levy and sources of revenue in every county in the United States. This work was finished in June, 1907, and the results were published in the form of a bulletin, which shows that there are over 2,150,000 miles of road in the United States, of which only 7.14 per cent were improved in 1904, and that the expenditure in money and labor for that year was nearly \$80,000,000. This bulletin comprises the first complete data ever assembled on this subject.

ROYAL BAKING POWDER

Absolutely Pure
The only baking powder made from Royal Grape & Cream of Tartar
No Alum, No Lime Phosphate

ARE YOU THINKING OF

Building or Remodelling?

Let us show you how you can get best results at half the usual expense by using

BEAVER BOARD

—the new scientifically constructed substitute for plaster and wall paper.

It is artistic, convenient, strong, cool, sanitary. It costs less, lasts longer, gives better service than any other.

Lewers & Cooke,

Limited

177 South King Street

FLANNEL AND PONGEE SUITS MADE TO YOUR MEASURE

J. E. ROCHA,

TAILOR

Elite Bldg. Hotel St.

Hawaiian Curios

Special Sale

Weedon's Bazaar

1140 FORT STREET

Forcegrowth

Will Do It

NEW DRUG STORE

SODA WATER FOUNTAIN

HAWAII DRUG CO.

42 Hotel Street, at end of Bethel Well Stocked with New Drugs and Novelties.

RED FERN AND WARNERS' CORSETS

Whitney AND Marsh

HALL-BORCHERT DRESS FORMS

Special Sale of Ladies' Hosiery

THIS WEEK

BLACK and WHITE LACE HOSE.....25c Values at 35c
TAN and WHITE LACE HOSE.....35c Values at 50c
BLACK and COLORED LACE HOSE.....50c Values at 75c
PLAIN LISLE HOSE, all colors.....50c Values at 75c
PLAIN LIGHT COLORED with Embroidery.....75c Values at 1.00
OUTSIZE, Black and White.....50c, 60c and 75c

Misses' Norfolk Middy Blouses

In White and Natural Colored Linens \$1.75

Crepe Shirts

Are the choice of the exclusive man for summer wear. Big stock of patterns from

\$1.50 up.

The Oriental Crepe Goods Co.

61 KING STREET—NEXT TO ADVERTISER OFFICE

Muslin Underwear

COMPLETE LINE—BEST QUALITY—PRICES REASONABLE

Canton Dry Goods Co.,

HOTEL STREET, OPPOSITE EMPIRE THEATER

Typewriter Multigraph Printing General Imitation Typewriter Work

GEO. S. IKEDA

78 Merchant St.

Telephone 230

HIGH CLASS

Upholstery and Drapery Work

J. HOPP & CO., Ltd.

Grand Clearing-Out Sale

The Combined Stocks of L. B. KERR & CO., LTD., and THE IDEAL CLOTHING STORE goods will be assembled at 84 Hotel Street, Pantheon Block. Sale begins Wednesday, July 31.

All goods will be sold at prices that will move them quickly. This stock consists of

High-Grade Clothing for Men and Boys

Furnishing Goods, Hosiery, Neckwear, Hats, Caps

WE WILL NOT QUOTE PRICES. SEE OUR WINDOW DISPLAY.

L. B. KERR & CO., Ltd.

84 HOTEL STREET, PANTHEON BLOCK.